

AMENDMENTS TO THE CLAIMS:

In the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

1.-12. (Cancelled)

13. (Currently Amended) A system comprising:

a)[[.]] at least one light emitting element wherein the at least one light emitting element is a combination or an array of elements selected from a laser; a Light Emitting Diode; a white light source and a Vertical Cavity Surface Emitting Laser;

b)[[.]] at least one primary light connecting element;

c)[[.]] at least one measuring cell comprising at least one tube capable of guiding light through a fluid in the inner volume of said at least one tube wherein said at least one tube comprises

 a first opening,

 a second opening, and

 an inner surface coated with at least one binding agent capable of binding at least one target introduced into said at least one tube;

d)[[.]] at least one secondary light connecting element; and

e) at least one light detecting element,

wherein the light emitted by the at least one light emitting element is transmitted into the fluid in the inner volume of said at least one tube by at least one primary light connecting element through said first opening of said tube;

further wherein the light guided through the fluid in the inner volume of said at least one tube is transmitted to the at least one light detecting element by the at least one secondary light connecting element; and

further wherein the amount of light or the variation of at least one property of the light detected by the at least one light detecting element relates to the amount or to a change of structure and/or properties of the at least one target bound to the at least one binding agent on the inner surface of the at least one tube of the at least one measuring cell.

14. (Cancelled)

15. (Cancelled)

16. (Currently Amended) The system of claim 13[.], where the at least one light detecting element is selected from

- a)[.] a Photomultiplier Tube;
- b)[.] a camera and
- c)[.] a photodiode.

17. (Currently Amended) The system of claim 13[.], where the at least one light detecting element is a combination or an array of elements selected from

- a)[.] a Photomultiplier Tube;
- b)[.] a camera and
- c)[.] a photodiode.

18. (Currently Amended) The system of claim 13[.], where the at least one primary and the at least one secondary light connecting elements are independently selected from

- a)[[.]] an optical window;
- b)[[.]] a lenslet array;
- c)[[.]] a spectral filter;
- d)[[.]] a partially reflecting mirror;
- e)[[.]] an intensity filter and
- f)[[.]] a grating index coupler.

19. (Currently Amended) The system of claim 13[[.]], where the at least one primary and/or at least one secondary light connecting element is also a fluid dispensing element.

20. (Currently Amended) The system of claim 13[[.]], where the at least one primary light connecting element and/or the at least one secondary light connecting element are/is integrated into the measuring cell.

21. (Currently Amended) The system of claim 13[[.]], further comprising at least one fluid dispensing element wherein the at least one fluid dispensing element is capable of transferring fluid to and from the at least tube.

22. (Currently Amended) The system of claim 13[[.]] further comprising at least one sample reservoir.

23. (Currently Amended) The system of claim 13[[.]] further comprising at least one disposal reservoir.

24. (Currently Amended) The system of claim 13, wherein the fluid is liquid or gaseous.

25. (Currently Amended) The system of claim 13[[.]], wherein the flow of the fluid is regulated.

26. (Currently Amended) The system of claim 13[.], wherein the flow of the fluid is regulated by at least one means chosen from pressure gravity capillary forces, and electrophoresis.
27. (Currently Amended) The system of claim 13[.], wherein the ability of the at least one tube to guide light through a fluid in the inner volume of said at least one tube is due to the structure of the inner surface of the at least one tube.
28. (Currently Amended) The system of claim 13[.], wherein the inner surface of the at least one tube comprises one or more layers, which one or more layers is chosen from organic materials and inorganic materials.
29. (Currently Amended) The system of claim 13[.], wherein the at least one tube is either a fluid core waveguide or a photonic bandgap crystal.
30. (Currently Amended) The system of claim 13[.], wherein the at least one binding agent is directly bound to the inner surface of the at least one tube.
31. (Currently Amended) The system of claim 13[.], further comprising an interstitial layer between the at least one binding agent and the inner surface of the at least one tube, wherein the interstitial layer may be a single layer or a multi-layer.
32. (Currently Amended) The system of claim 13[.], wherein the inner surface of the at least one tube of the measuring cell is coated with an additional layer that prevents or retards non-specific adsorption and/or non-specific binding of the target and/or other components of the fluid.
33. (Currently Amended) The system of claim 13[.], wherein the inner surface of the at least one tube is coated with an additional layer which interacts with the at least one bound target in such a way that it changes the properties of the light guided through the at least one tube.

34.-58. (Cancelled)

59. (Currently Amended) The system of claim 13[.], further comprising a material surrounding the at least one tube, which material or its structure resulting in the at least one tube guiding light through a fluid in the inner volume of said at least one tube.

60. (Currently Amended) The system of claim 13[.], wherein the at least one tube comprises a material having at least one feature wherein said at least one feature is capable of guiding light through the fluid in the inner volume of said at least one tube.

61. (Cancelled)

62. (Currently Amended) The system of claim 13[.], wherein said at least one target is introduced into said at least one tube by loading a fluid comprising said at least one target through the first opening into said at least one tube.